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			EXAMINER SHECHTMAN, SEAN P	
			ART UNIT 2125	PAPER NUMBER

DATE MAILED: 01/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/829,436

Applicant(s)

FAIRLIE ET AL.

Examiner

Sean P. Shechtman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-81 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25-81 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/387,828.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4/22/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 25-81 are presented for examination.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 09/387,828, filed on September 1st 1999.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following features must be shown or the feature(s) canceled from the claim(s). A hydrogen conversion device is an internal combustion engine (claim 43) and a different hydrogen conversion device is a fuel cell (claim 44) in compliance with 37 CFR 1.84(h)(5); a source of electric energy includes an electricity grid (claim 46); electricity for said electricity grid is produced by a plurality of primary energy resources (claim 47); said primary energy resources include renewable resources (claim 48); said primary energy resources include fossil fuels, wind, solar, nuclear and hydro (claim 49); energy source data includes real time data, historical data, forecasted data, energy cost data (claims 50-53); electricity generated by a hydrogen conversion device is transmitted to an electricity grid (claim 56); a non-grid source of electric energy (claim 57); electricity for said at least one non-grid source of electric energy is produced by at least one primary energy resource (claim 58); a source of electric energy includes an electricity grid and at least one non-grid source of electric energy and wherein said controller selects one of said at least one sources of electric energy based on data including said energy source data (claim 62); energy source data includes data

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pertaining to emissions associated with the primary energy resources used for producing said electricity (claim 66); energy source data includes data pertaining to credits awarded for use of certain energy sources (claim 67); a hydrogen storage apparatus comprises at least one hydride storage chamber (claim 70); a hydrogen storage apparatus comprises at least one container for storing pressurized hydrogen (claim 71); a controller comprises a processor for processing said data (claim 75); a controller comprises a processor for processing said data and a control system for controlling the operation of said hydrogen generator (claim 76); data is transmitted to said controller using the same wires that are used to deliver said electricity (claim 77); data is transmitted to said controller by wireless transmission (claim 78); a data processor including a hydrogen generator data processor for processing data concerning said hydrogen generator, a hydrogen storage data processor for processing data concerning said hydrogen storage apparatus, a hydrogen demand data processor for processing data concerning hydrogen demand and an energy source data processor for processing data concerning said source of electric energy (claim 79); and a controller for controlling the generation and storage of hydrogen based on inputs including inputs received from said data processor (claim 79). No new matter should be entered.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional

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replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

5. A series of singular dependent claims is permissible in which a dependent claim refers to a preceding claim which, in turn, refers to another preceding claim. A claim which depends from a dependent claim should not be separated by any claim which does not also depend from said dependent claim. It should be kept in mind that a dependent claim may refer to any preceding independent claim. In general, applicant's sequence will not be changed. See MPEP § 608.01(n).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 51, 52, 66, 67, and 77 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the

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relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

6. Claim 77 requires data concerning a source of electric energy to be transmitted to and processed by a controller using the same wires that are used to deliver electricity to a hydrogen generator. The examiner respectfully notes paragraph 43 of the specification, wherein applicant teaches “[I]n the practice of the present invention in a preferred embodiment, the wires that deliver the electrical energy to the electrolyser are used to communicate useful information about the state of the electrolysis process to related devices”. The examiner respectfully submits that while the specification may be enabling for wires that deliver electrical energy to a electrolyser that are also used to communicate useful information about the state of the electrolysis process to related devices, the specification is silent to teach that the related devices be a controller and any useful information be data concerning a source of electric energy to be processed by a controller. Disclosure in an application that merely renders the later-claimed invention obvious is not sufficient to meet the written description requirements of 35 U.S.C 112, first paragraph. *Lockwood, v. American Airlines, Inc.* 41 U.S.P.Q.2d. 1961, 1966 (Fed. Cir. 1997).

7. Claim 66 requires the limitation of a controller for processing data pertaining to emissions associated with the primary energy resources used for producing electricity that is delivered to a hydrogen generator. The examiner respectfully submits that, while the specification recognizes hydrocarbon-fueled vehicle distribution networks have emissions problems, the specification is silent to teach a controller for processing data pertaining to emissions associated with the primary energy resources used for producing electricity that is delivered to a hydrogen generator.

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8. Claim 67 requires the limitation of a controller for processing data pertaining to credits awarded for use of certain energy sources that delivered electricity to a hydrogen generator. The examiner respectfully submits that, while the specification teaches users can define demands for hydrogen transmitted by means of use of a credit card, the specification is silent to teach a controller for processing data pertaining to credits awarded for use of certain energy sources that delivered electricity to a hydrogen generator.

9. Referring to claims 51 and 52, the specification is silent to teach a controller for processing energy source data including historical and forecasted data concerning a source of electric energy.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 31-33, 50-55, 62, 64, 66-67, and 79-81 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

10. Claim 31 recites the limitation "said controller inputs" in line 1. Claim 32 recites the limitation "said controller inputs" in line 1. Claim 33 recites the limitation "said controller inputs" in line 1. Claims 50-53 recite the limitation "said energy source data" in line 1. Claim 54 recites the limitation "said energy source data" in lines 2-3. Claim 55 recites the limitation "said energy source data" in line 3. Claim 62 recites the limitation "said energy source data" in line 4. Claim 64 recites the limitation "said energy source data" in line 3. Claims 66-67 recite the limitation "said energy source data" in line 1. Claim 66 recites the limitation "the primary

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energy resources" in line 2. Claim 79 recites the limitation "said at least one source of electric energy" in section c. There is insufficient antecedent basis for these limitations in the claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 25, 26, 28, 30, 31, 40, 42, 44, 46, 50, 57, 58, 68, 72, 74, 77 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 4,689,133 to McIlhenny.

Referring to claim 25, McIlhenny teaches a hydrogen energy system comprising:

(a) a hydrogen generator for generating hydrogen from electricity received from a source of electric energy¹ (Col. 1, lines 53-65; Col. 2, lines 30-31; Col. 3, lines 3-8; Col. 4, lines 5-8; Col. 1, line 10); and (b) a controller for processing data concerning said source of electric energy (Col. 2, lines 30-49; Col. 3, lines 18-55, the comparator). The claim does not require a processor (see dependent claim 75).

Referring to claim 26, McIlhenny teaches a system as claimed in claim 25 wherein said controller further processes data concerning said hydrogen generator (Col. 2, lines 30-49; Col. 3, lines 18-55, the comparator). The examiner respectfully submits the signals processed by the comparator is data concerning both the fuel cell and electrolysis cell because these signals sense the voltage supplied to the electrolysis cell from the fuel cell.

¹ The fuel cell supplies electricity to the electrolysis cell and the electrolysis cell generates hydrogen from this electricity.

Referring to claim 28, McIlhenny teaches a system as claimed in claim 25 further comprising a hydrogen storage apparatus for storing at least some of the hydrogen generated by said hydrogen generator (Col. 2, lines 57-58; Col. 3, lines 5-8).

Referring to claim 30, McIlhenny teaches a system as claimed in claim 25 wherein said controller controls the generation of hydrogen based on inputs including data concerning said source of electric energy (Col. 2, lines 30-38; either elements 32 or 30 are inputs to the comparator).

Referring to claim 31, McIlhenny teaches a system as claimed in claim 30 wherein said controller inputs further include data concerning said hydrogen generator. The examiner respectfully submits the signals input into the comparator is data concerning both the fuel cell and electrolysis cell because these signals sense are used to control the voltage supplied to the electrolysis cell from the fuel cell.

Referring to claim 40, McIlhenny teaches a system as claimed in claim 28 further comprising a hydrogen delivery system for delivering hydrogen from at least one of said hydrogen generator and said hydrogen storage apparatus to a hydrogen user (Col. 2, lines 57-58; Col. 3, lines 5-8).

Referring to claims 4, 44, 68, McIlhenny teaches a system as claimed in claim 28 further comprising a hydrogen conversion device for receiving hydrogen from *at least one of* said hydrogen generator and said hydrogen storage device and converting said hydrogen into electricity, further comprising hydrogen fuel user means (the fuel cell).

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Referring to claim 46, McIlhenny teaches a system as claimed in claim 25 wherein said source of electric energy includes an electricity grid (Col. 1, lines 16-24). McIlhenny teaches it is already known to power the electrolysis cell from a power grid.

Referring to claim 50, McIlhenny teaches a system as claimed in claim 25 wherein said energy source data includes real time data. The examiner respectfully asserts that electric signals are in real-time.

Referring to claim 57, McIlhenny teaches a system according to claim 25 wherein said source of electric energy includes at least one non-grid source of electric energy (the fuel cell).

Referring to claim 58, McIlhenny teaches a system as claimed in claim 57 wherein electricity for said at least one non-grid source of electric energy is produced by at least one primary energy resource (the fuel produces electricity for the electrolysis cell to generate hydrogen for the fuel cell, thus the fuel cell produces electricity...for the fuel cell by the fuel cell).

Referring to claim 72, McIlhenny teaches a system as claimed in claim 25 wherein said controller controls the amount of electricity received by said hydrogen generator (Col. 2, lines 30-49; Col. 3, lines 18-55, the comparator).

Referring to claim 74, McIlhenny teaches a system as claimed in claim 25 wherein said controller comprises a single controller (the comparator, element 26).

Referring to claim 77, McIlhenny teaches a system as claimed in claim 25 wherein said data is transmitted to said controller using the same wires that are used to deliver said electricity (See figure, element 16).

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12. Claims 25-31, 33, 40-45, 57, 58, 68, 70-72, and 74-76 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 5,372,617 to Kerrebrock (supplied by applicant).

Referring to claim 25, Kerrebrock teaches a hydrogen energy system comprising:

(a) a hydrogen generator for generating hydrogen (Fig. 4, element 22; Col. 1, lines 7-10) from electricity received from a source of electric energy (Col. 6, lines 45-46; Col. 7, line 67 – Col. 8, line 5); and (b) a controller for processing data concerning said source of electric energy (Col. 6, lines 47-54).

Referring to claim 26, Kerrebrock teaches a system as claimed in claim 25 wherein said controller further processes data concerning said hydrogen generator (Col. 6, lines 47-48).

Referring to claim 27, Kerrebrock teaches a system as claimed in claim 25 wherein said controller further processes data concerning hydrogen demand (Col. 8, lines 30-34).

Referring to claim 28, Kerrebrock teaches a system as claimed in claim 25 further comprising a hydrogen storage apparatus for storing at least some of the hydrogen generated by said hydrogen generator (Col. 8, lines 44-49).

Referring to claim 29, Kerrebrock teaches a system as claimed in claim 28 wherein said controller further processes data concerning said hydrogen storage apparatus (Col. 9, lines 1-6 or lines 63-65; Col. 8, lines 44-49).

Referring to claim 30, Kerrebrock teaches a system as claimed in claim 25 wherein said controller controls the generation of hydrogen based on inputs including data concerning said source of electric energy (Col. 8, lines 30-34).

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Referring to claim 31, Kerrebrock teaches a system as claimed in claim 30 wherein said controller inputs further include data concerning said hydrogen generator (Fig. 4, element 98).

Referring to claim 33, Kerrebrock teaches a system as claimed in claim 30 further comprising a hydrogen storage apparatus for storing at least some of the hydrogen generated by said hydrogen generator (Col. 8, lines 44-49) and wherein said controller inputs further include data concerning said hydrogen storage apparatus (Col. 9, lines 1-6 or lines 63-65; Col. 8, lines 44-49).

Referring to claim 40, Kerrebrock teaches a system as claimed in claim 28 further comprising a hydrogen delivery system for delivering hydrogen from at least one of said hydrogen generator and said hydrogen storage apparatus to a hydrogen user (the fuel cell).

Referring to claim 41, Kerrebrock teaches a system as claimed in claim 40 wherein said hydrogen user is a hydrogen conversion device for powering a vehicle (Col. 4, lines 56-57).

Referring to claims 42, 44, 68, Kerrebrock teaches a system as claimed in claim 28 further comprising a hydrogen conversion device for receiving hydrogen from *at least one of* said hydrogen generator and said hydrogen storage device and converting said hydrogen into electricity, hydrogen fuel user means (the fuel cell).

Referring to claim 45, Kerrebrock teaches a system as claimed in claim 28 further comprising a hydrogen conversion device for receiving hydrogen from *at least one of* said hydrogen generator and said hydrogen storage apparatus and converting said hydrogen into thermal energy (Col. 3, lines 44-55).

Referring to claim 57, Kerrebrock teaches a system according to claim 25 wherein said source of electric energy includes at least one non-grid source of electric energy (the fuel cell).

Referring to claim 58, Kerrebrock teaches a system as claimed in claim 57 wherein electricity for said at least one non-grid source of electric energy is produced by at least one primary energy resource (the fuel cell).

Referring to claim 70, Kerrebrock teaches a system as claimed in claim 28 wherein said hydrogen storage apparatus comprises at least one hydride storage chamber (Col. 11, lines 1-2; Col. 5, lines 30-31).

Referring to claim 71, Kerrebrock teaches a system as claimed in claim 28 wherein said hydrogen storage apparatus comprises at least one container for storing pressurized hydrogen (Col. 8, lines 10-29 or Col. 9, line 63 – Col. 10, line 9).

Referring to claim 72, Kerrebrock teaches a system as claimed in claim 25 wherein said controller controls the amount of electricity received by said hydrogen generator (Col. 6, lines 45-46; Col. 6, lines 52-54).

Referring to claim 74, Kerrebrock teaches a system as claimed in claim 25 wherein said controller comprises a single controller (Fig. 4, element 46).

Referring to claim 75, Kerrebrock teaches a system as claimed in claim 25 wherein said controller comprises a processor for processing said data (Fig. 4, element 46).

Referring to claim 76, Kerrebrock teaches a system as claimed in claim 25 wherein said controller comprises a processor for processing said data (Fig. 4, element 46) and a control system for controlling the operation of said hydrogen generator (Fig. 4, title).

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13. Claims 25, 26, 28, 30, 31, 40, 42-49, 54, 57-61, 68, 71, 72, 74, and 77 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 5,592,028 to Pritchard (supplied by applicant).

Referring to claim 25, Pritchard teaches a hydrogen energy system comprising:

(a) a hydrogen generator for generating hydrogen from electricity received from a source of electric energy (Col. 4, lines 59-61); and (b) a controller for processing data concerning said source of electric energy (Col. 3, lines 38-42). The controller is not required to be a processor (See dependent claim 75). The switch taught by Pritchard includes control means arranged to cause it to adopt to a particular position dependent on the voltage across it, namely, the voltage/electricity from the electric energy source.

Referring to claim 26, Pritchard teaches a system as claimed in claim 25 wherein said controller further processes data concerning said hydrogen generator (Col. 3, lines 59-60).

Referring to claim 28, Pritchard teaches a system as claimed in claim 25 further comprising a hydrogen storage apparatus for storing at least some of the hydrogen generated by said hydrogen generator (Col. 4, line 63; Col. 3, lines 1-6).

Referring to claim 30, Pritchard teaches a system as claimed in claim 25 wherein said controller controls the generation of hydrogen based on inputs including data concerning said source of electric energy (Col. 3, lines 32- Col. 4, line 8). See the inputs to the switches from the electrolysis module.

Referring to claim 31, Pritchard teaches a system as claimed in claim 30 wherein said controller inputs further include data concerning said hydrogen generator (Col. 3, lines 32- Col. 4, line 8).

Referring to claim 40, Pritchard teaches a system as claimed in claim 28 further comprising a hydrogen delivery system for delivering hydrogen from *at least one of* said hydrogen generator and said hydrogen storage apparatus to a hydrogen user (Col. 2, lines 63-64).

Referring to claims 42, 44, 68, Pritchard teaches a system as claimed in claim 28 further comprising a hydrogen conversion device for receiving hydrogen from *at least one of* said hydrogen generator and said hydrogen storage device and converting said hydrogen into electricity (Col. 2, lines 32-33).

Referring to claim 43, Pritchard teaches a system as claimed in claim 42 wherein said hydrogen conversion device is an internal combustion engine (Col. 2, line 27).

Referring to claim 45, Pritchard teaches a system as claimed in claim 28 further comprising a hydrogen conversion device for receiving hydrogen from *at least one of* said hydrogen generator and said hydrogen storage apparatus and converting said hydrogen into thermal energy (Col. 6, claim 4).

Referring to claim 46, Pritchard teaches a system as claimed in claim 25 wherein said source of electric energy includes an electricity grid (Fig. 1, element 3; Col. 2, lines 56-59).

Referring to claim 47, Pritchard teaches a system as claimed in claim 46 wherein electricity for said electricity grid is produced by a plurality of primary energy resources (wind farm, Col. 2, line 57).

Referring to claims 48 and 59, Pritchard teaches a system as claimed in claim 47 wherein said primary energy resources include renewable resources (wind farm, Col. 2, line 57).

Referring to claims 49 and 61, Pritchard teaches a system as claimed in claim 47 wherein said primary energy resources include *at least one of the following*: fossil fuels, wind, solar, nuclear and hydro (wind farm, Col. 2, line 57).

Referring to claim 54, Pritchard teaches a system as claimed in claim 30 wherein said controller modulates the generation of hydrogen by said hydrogen generator based on data including said energy source data (Col. 3, line 59 – Col. 4, line 81.6 volts to 1.58 volts).

Referring to claim 57, Pritchard teaches a system according to claim 25 wherein said source of electric energy includes at least one non-grid source of electric energy (wind farm).

Referring to claim 58, Pritchard teaches a system as claimed in claim 57 wherein electricity for said at least one non-grid source of electric energy is produced by at least one primary energy resource (wind farm).

Referring to claim 60, Pritchard teaches a system as claimed in claim 59 wherein said renewable resources include *at least one of* wind, solar, and hydro (wind farm).

Referring to claim 71, Pritchard teaches a system as claimed in claim 28 wherein said hydrogen storage apparatus comprises at least one container for storing pressurized hydrogen (Col. 3, lines 1-20).

Referring to claim 72, Pritchard teaches a system as claimed in claim 25 wherein said controller controls the amount of electricity received by said hydrogen generator (Col. 3, lines 59 – Col. 4, line 8).

Referring to claim 74, Pritchard teaches a system as claimed in claim 25 wherein said controller comprises a single controller (element 32).

Referring to claim 77, Pritchard teaches a system as claimed in claim 25 wherein said data is transmitted to said controller using the same wires that are used to deliver said electricity (Col. 3, line 59 – Col. 4, line 8).

14. Claims 25-40, 42, 44, 45, 54, 55, 57, 58, 68, 69, 70, 71, 72, 73, 75-77, 79-81 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 5,527,623 to Gardner.

Referring to claims 25-40, 42, 44, 45, 54, 55, 57, 58, 68, 69, 70, 71, 72, 73, 75-77, 79, Gardner teaches a hydrogen energy system comprising:

a hydrogen generator for generating hydrogen from energy received from a energy source (Col. 4, lines 9-26, pure hydrogen in the hydrogen store generated by the electrodes powered by the electrical source 36); a hydrogen storage apparatus for storing at least some of the hydrogen generated by said hydrogen generator (Col. 4, lines 1-8; element 16); a data processor including a hydrogen generator data processor for processing data concerning said hydrogen generator (Col. 6, lines 33-36), a hydrogen storage data processor for processing data concerning said hydrogen storage apparatus (Col. 5, lines 3-11), a hydrogen demand data processor for processing data concerning hydrogen demand (Col. 6, lines 13-40) and an energy source data processor for processing data concerning said source of electric energy (Col. 6, lines 13-40); and a controller for controlling the generation² (Col. 6, lines 28-32) and storage³ (Col. 5, lines 3-11) of hydrogen based on inputs including inputs received from said data processor⁴ (Col. 5, lines 12-23). The examiner respectfully submits that the claims, as such, do not require that the data processed by the data processor have anything to do with the inputs received from data

² The electric source controls the electrodes.

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processor. In fact, the data processed by the processor is not even required to be hydrogen generation data, hydrogen storage data, hydrogen demand data, or energy data.

Referring to claim 80, Gardner teaches a system as claimed in claim 79 further comprising a compressor for compressing said hydrogen to a minimum desired pressure (Col. 4, lines 9-51, set by voltage).

Referring to claim 81, Gardner teaches a system as claimed in claim 79 further comprising a device for converting hydrogen into electricity (the fuel cell).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

³ The control valves control the flow of hydrogen from the hydrogen store.

⁴ The microprocessor controls the valves and the electrical source.

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15. Claims 55, 56, 62-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,592,028 to Pritchard as applied to claims 30 and 42 above, and further in view of U.S. Pat. No. 6,011,324 to Kohlstruck.

Referring to claims 55, 56, 62-65, Pritchard teaches all the limitations set forth above and Pritchard teaches a source of electric energy includes an electricity grid and at least one non-grid source of electric energy and Pritchard teaches a device for converting hydrogen into electricity (Col. 2, lines 32-62), however, Pritchard fails to teach a controller selects *one of* the sources of electric energy based on data including energy source data, wherein the controller modulates the generation of electricity by the hydrogen conversion device based on data including energy source data, wherein at least some of the electricity generated by the hydrogen conversion device is transmitted to the electricity grid.

However, referring to claims 55, 56, 62-65, Kohlstruck teaches analogous art, wherein a controller selects *one of* the sources of electric energy based on data including energy source data, wherein the controller modulates the generation of electricity by the hydrogen conversion device based on data including energy source data, wherein at least some of the electricity generated by the hydrogen conversion device is transmitted to the electricity grid (Col. 1, lines 7-12; Col. 3, lines 56-60; Col. 4, lines 47-65).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to combine the teachings of Kohlstruck with the teachings of Pritchard. One of ordinary skill in the art would have been motivated to combine these references because Kohlstruck teaches an interruption-free current supply arrangement for AC voltage that generates

AC for customers without a large outlay within a short period of time after the network voltage has fallen below a predetermined threshold value (Col. 2, lines 7-12).

16. Claims 29 and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,592,028 to Pritchard as applied to claim 28 above, and further in view of U.S. Pat. No. 5,817,157 to Checketts (supplied by applicant).

Referring to claims 29 and 69, Pritchard teaches all the limitations set forth above, however, Pritchard fails to teach the controller further processes data concerning the hydrogen storage apparatus, wherein the controller initiates operation of the hydrogen generator to generate hydrogen when the amount of hydrogen stored in the hydrogen storage apparatus falls below a predetermined amount.

However, referring to claims 29 and 69, Checketts teaches analogous art, wherein a controller further processes data concerning the hydrogen storage apparatus, wherein the controller initiates operation of the hydrogen generator to generate hydrogen when the amount of hydrogen stored in the hydrogen storage apparatus falls below a predetermined amount (Col. 8, lines 37-55; Col. 17, lines 1-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to combine the teachings of Checketts with the teachings of Pritchard. One of ordinary skill in the art would have been motivated to combine these references because Checketts teaches a computer system that keeps track of the cells that have not been chemically reacted and will project the number of cells that are needed to be reacted to restore the tank pressure to within a desired range (Col. 4, lines 32-41).

17. Claims 50-53, 66, 67, 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,592,028 to Pritchard as applied to claim 25 above, and further in view of U.S. Pat. No. 6,102,958 to Meystel.

Referring to claims 50-53, 66, 67, 73, Pritchard teaches all the limitations set forth above, however, Pritchard fails to teach energy source data includes real time data, historical data, forecasted data, energy cost data, data pertaining to emissions associated with the primary energy resources used for producing electricity, data pertaining to credits awarded for use of certain energy sources, wherein a controller controls the duration of electricity supply to the generator.

However, referring to claims 50-53, 66, 67, 73, Meystel teaches analogous art, wherein energy source data includes real time data, historical data, forecasted data, energy cost data, data pertaining to emissions associated with the primary energy resources used for producing electricity, data pertaining to credits awarded for use of certain energy sources, wherein a controller controls the duration of electricity supply to the generator (Col. 8, lines 1-64).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to combine the teachings of Meystel with the teachings of Pritchard. One of ordinary skill in the art would have been motivated to combine these references because Meystel teaches a multi-resolutional decision support system that determines optimal controls using multi-resolutional analysis of acquired data, wherein a knowledge base is created to be searched for optimal controls (Abstract).

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18. Claims 50-53, 67, 73, 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 5,592,028 to Pritchard as applied to claim 25 above, and further in view of U.S. Pat. No. 5,818,725 to McNamara.

Referring to claims 50-53, 67, 73, 78, Pritchard teaches all the limitations set forth above, however, Pritchard fails to teach energy source data includes real time data, historical data, forecasted data, energy cost data, data is transmitted to controller by wireless transmission, data pertaining to credits awarded for use of certain energy sources, wherein a controller controls the duration of electricity supply to the generator.

However, referring to claims 50-53, 67, 73, 78, McNamara teaches analogous art, wherein energy source data includes real time data, historical data, forecasted data, energy cost data, data is transmitted to controller by wireless transmission, data pertaining to credits awarded for use of certain energy sources, wherein a controller controls the duration of electricity supply to the generator (Col. 7-8, claims 14).

Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to combine the teachings of McNamara with the teachings of Pritchard. One of ordinary skill in the art would have been motivated to combine these references because McNamara teaches a communications channel that allows for the collection and transmission of user demand requirements and control of user demand services (Col. 1, lines 35-44), wherein distributed networks connect to central computer systems via high-speed digital lines and permits automatic meter reading and remote services (Col. 2, lines 23-42).

Conclusion

19. The prior art or art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents or publications are cited to further show the state of the art with respect to the generation of hydrogen from electricity.

U.S. Pat. No. 3,635,812 to Spacil.

The following patents or publications are cited to further show the state of the art with respect to fuel cells that operate in reverse mode to generate hydrogen from electricity and that such operation was commonly known in the art in 1974.

U.S. Pat. No. 3,917,520 to Katz (See brief description, paragraph 5).

The following patents or publications are cited to further show the state of the art with respect to controlling generation or storage of hydrogen.

U.S. Pat. No. 5,346,778 to Ewan.

U.S. Pat. No. 5,512,145 to Hollenberg.

U.S. Pat. No. 4,085,709 to Tangri.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Shechtman whose telephone number is (571) 272-3754.

The examiner can normally be reached on 9:30am-6:00pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SPS

Sean P. Shechtman

January 5, 2005

A handwritten signature in black ink, appearing to read "L. P. Picard", with a stylized flourish at the end.

LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100